Application No.: 10/587,653

Docket No.: 0446-0188PUS1 Reply dated May 17, 2011 Page 3 of 17 Reply to Office Action of February 17, 2011

AMENDMENTS TO THE CLAIMS

1. (Withdrawn) A process for the preparation of solid polyester granules by suspension polymerization, the process comprising reacting a combination of diacyl peroxides with an aromatic amine of formula (I):

$$Ar N = R^{1}$$

$$R^{2}$$

where R^1 is an optionally substituted $C_1\text{-}C_{20}$ alkyl group, or $-(CHR'CHR'\text{-}O)_nH$, where n is 1 to 10 and each R' is independently selected from H and C₁-C₃ alkyl;

 R^2 is an optionally substituted $C_1\hbox{-} C_{20}$ alkyl group, or -(CHR'CHR'-O)_nH, where n is 1 to 10 and each R' is independently selected from H and C₁-C₃ alkyl; and

Ar is an optionally substituted aryl group,

to provide for a redox initiating system,

wherein the combination of diacyl peroxides comprises diaroyl peroxide and dialkanoyl peroxide having a diaroyl peroxide to dialkanoyl peroxide mole ratio that is equal to or greater than 1:1.

- The process according to claim 1, wherein one or both of R¹ and 2. (Withdrawn) R² are hydroxyethyl groups.
- 3. (Withdrawn) The process according to claim 1, wherein the diaroyl peroxide is selected from compounds of formula (II):

(II)

where R³ and R⁴ are independently selected from optionally substituted aryl.

4. (Cancelled)

Application No.: 10/587,653 Docket No.: 0446-0188PUS1
Reply dated May 17, 2011 Page 4 of 17

Reply to Office Action of February 17, 2011

5. (Withdrawn) The process according to claim 1, wherein the diaroyl peroxide is selected from dibenzoyl peroxide and 2,4-dichlorobenzoyl peroxide.

6. (Withdrawn) The process according to claim 1, wherein the dialkanoyl peroxide is selected from compounds of formula (III):

(III)

where R⁵ and R⁶ are independently selected from optionally substituted alkyl.

7. (Cancelled)

- 8. (Withdrawn) The process according to claim 1, wherein the dialkanoyl peroxide is selected from dilauroyl peroxide, diacetyl peroxide, disuccinyl peroxide, di(3,5,5-trimethylhexanoyl) peroxide, and didecanoyl peroxide.
- 9. (Withdrawn) The process according to claim 1, wherein the mole ratio of the diaroyl peroxide to the dialkanoyl peroxide ranges from 1:1 to 10:1.

10-11. (Cancelled)

12. (Withdrawn) The process according to claim 1, wherein the mole ratio of the aromatic amine to the total number of moles of the diaroyl and dialkanoyl peroxides ranges from 1:2 to 1:8.

13-14. (Cancelled)

Application No.: 10/587,653 Docket No.: 0446-0188PUS1
Reply dated May 17, 2011 Page 5 of 17

Reply to Office Action of February 17, 2011

15. (Withdrawn) The process according to claim 1, wherein the aromatic amine is selected from N-ethyl-N-hydroxyethyl aniline, N,N-bis hydroxyethyl aniline, N-ethyl-N-hydroxyethyl-p-toluidine and N,N-bis 2-hydroxyethyl)-p-toluidine.

- 16. (Original) A process for the preparation of solid polyester granules comprising:
- (i) preparing a solution of unsaturated polyester and a combination of diacyl peroxides in styrene, wherein the combination of diacyl peroxides comprises diaroyl peroxide and dialkanoyl peroxide having a diaroyl peroxide to dialkanoyl peroxide mole ratio that is equal to or greater than 1:1,
 - (ii) emulsifying said solution in water to provide a stabilised oil-in-water emulsion,
 - (iii) adding to said emulsion an aromatic amine of formula (I):

(I)

where R^1 is an optionally substituted C_1 - C_{20} alkyl group, or –(CHR'CHR'-O)_nH, where n is 1 to 10 and each R' is independently selected from H and C_1 - C_3 alkyl;

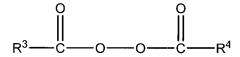
 R^2 is an optionally substituted C_1 - C_{20} alkyl group, or -(CHR'CHR'-O)_nH, where n is 1 to 10 and each R' is independently selected from H and C_1 - C_3 alkyl; and

Ar is an optionally substituted aryl group, such that reaction of said aromatic amine of formula (I) with each of the diaroyl and dialkanoyl peroxides generates a radical flux capable of initiating polymerisation of the unsaturated polyester and the styrene.

- 17. (Original) The process according to claim 16, wherein one or both of R^1 and R^2 are hydroxy ethyl groups.
- 18. (Previously presented) The process according to claim 16, wherein the diaroyl peroxide is selected from compounds of formula (II):

Application No.: 10/587,653 Reply dated May 17, 2011

Reply to Office Action of February 17, 2011



(II)

where R³ and R⁴ are independently selected from optionally substituted aryl.

19. (Cancelled)

- 20. (**Previously presented**) The process according to claim 16, wherein the diaroyl peroxide is selected from dibenzoyl peroxide and 2,4-dichlorobenzoyl peroxide.
- 21. (**Previously presented**) The process according to claim 16, wherein the dialkanoyl peroxide is selected from compounds of formula (III):

(III)

where R⁵ and R⁶ are independently selected from optionally substituted alkyl.

22. (Cancelled)

- 23. (**Previously presented**) The process according to claim 16, wherein the dialkanoyl peroxide is selected from dilauroyl peroxide, diacetyl peroxide, disuccinyl peroxide, di(3,5,5-trimethylhexanoyl) peroxide, and didecanoyl peroxide.
- 24. (**Previously presented**) The process according to claim 16, wherein the mole ratio of the diaroyl peroxide to the dialkanoyl peroxide ranges from 1:1 to 10:1.

25-26. (Cancelled)

Docket No.: 0446-0188PUS1

Page 6 of 17

Application No.: 10/587,653 Docket No.: 0446-0188PUS1
Reply dated May 17, 2011 Page 7 of 17

Reply to Office Action of February 17, 2011

27. (Previously presented) The process according to claim 16, wherein the mole ratio

of the aromatic amine to the total number of moles of the diaroyl and dialkanoyl peroxides

ranges from 1:2 to 1:8.

28-29. (Cancelled)

30. (Previously presented) The process according to claim 16, wherein the aromatic

amine is selected from N-ethyl-N-hydroxyethyl aniline, N,N-bis hydroxyethyl aniline, N-ethyl-

N-hydroxyethyl-p-toluidine and N,N-bis(2-hydroxyethyl)-p-toluidine.

31. (Previously presented) The process according to claim 16, wherein the resultant

polyester granule slurry prepared by the process has a residual free styrene level of less than

1000 ppm.

32-33. (Cancelled)

34. (Previously presented) The process according to claim 16, wherein the unsaturated

polyester is a terpolymer of maleic anhydride, phthalic anhydride and propylene glycol.

35. (Previously presented) The process according to claim 16, wherein the solid

polyester granules have an average diameter of up to 500 μm .

36. (Previously presented) The process according to claim 16, wherein the aromatic

amine is added to the emulsion as a spray or as a series of thin streams.

37. (Withdrawn) A process for the preparation of solid polyester granules

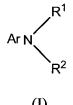
comprising:

Application No.: 10/587,653 Docket No.: 0446-0188PUS1
Reply dated May 17, 2011 Page 8 of 17

Reply to Office Action of February 17, 2011

(i) preparing a solution of unsaturated polyester, and first diacyl and second diacyl peroxide in styrene, wherein the mole ratio of the first peroxide to the second peroxide is equal to or greater than 1:1,

- (ii) emulsifying said solution in water to provide a stabilised oil-in-water emulsion,
- (iii) adding to said emulsion an aromatic amine of formula (I):



where R^1 is an optionally substituted C_1 - C_{20} alkyl group, or -(CHR'CHR'-O)_nH where n is 1 to 10 and each R' is independently selected from H and C_1 - C_3 alkyl;

 R^2 is an optionally substituted C_1 - C_{20} alkyl group, or -(CHR'CHR'-O)_nH where n is 1 to 10 and each R' is independently selected from H or C_1 - C_3 alkyl; and

Ar is an optionally substituted aryl group, such that reaction of the aromatic amine of formula (I) with each of the first and second diacyl peroxides generates a radical flux capable of initiating polymerisation of the unsaturated polyester and the styrene, and wherein at the commencement of the polymerisation the radical flux generated by the first peroxide is greater than any radical flux generated by the second peroxide.

38. (Cancelled)

- 39. (Withdrawn) A water-based decorative paint composition comprising binder and polyester granules prepared in accordance with the process of claims 1, 16 or 37.
- 40. (Withdrawn) The water-based decorative paint composition according to claim 39, wherein the pigmented polyester granules comprise two or more differently coloured pigmented polyester granules.

Application No.: 10/587,653 Docket No.: 0446-0188PUS1 Reply dated May 17, 2011

Reply to Office Action of February 17, 2011

41. (Withdrawn) The water-based decorative paint composition according to claim 40, wherein the two or more differently coloured pigmented polyester granules attain their different colours through incorporation of different pigment materials.

42. (Cancelled)

- 43. (Withdrawn) A water-based decorative paint film comprising polyester granules prepared in accordance with the process of claims 1, 16 or 37, wherein the granules protrude from the surface of the paint film.
- 44. (Withdrawn) A redox initiating system for use in the manufacture of solid polyester granules by suspension polymerization, the system comprising a combination of diacyl peroxides with an aromatic amine of formula (I):

$$Ar \, N = R^{1}$$

where R^1 is an optionally substituted C_1 - C_{20} alkyl group, or –(CHR'CHR'-O)_nH, where n is 1 to 10 and each R' is independently selected from H and C₁-C₃ alkyl;

 R^2 is an optionally substituted $C_1\text{-}C_{20}$ alkyl group, or -(CHR'CHR'-O)_nH, where n is 1 to 10 and each R' is independently selected from H and C₁-C₃ alkyl; and

Ar is an optionally substituted aryl group,

wherein the combination of diacyl peroxides comprises diaroyl peroxide and dialkanoyl peroxide having a diaroyl peroxide to dialkanoyl peroxide mole ratio that is equal to or greater than 1:1.

45. (Withdrawn) The redox initiating system according to claim 44, wherein one or both of R¹ and R² are hydroxyethyl groups.

Page 9 of 17

Application No.: 10/587,653 Reply dated May 17, 2011

Reply to Office Action of February 17, 2011

46. (Withdrawn) The redox initiating system according to claim 44, wherein the diaroyl peroxide is selected from compounds of formula (II):

$$R^3$$
— C — O — O — C — R^4

(II)

where R³ and R⁴ are independently selected from optionally substituted aryl.

- 47. **(Withdrawn)** The redox initiating system according to claim 44, wherein the diaroyl peroxide is selected from dibenzoyl peroxide and 2,4-dichlorobenzoyl peroxide.
- 48. (Withdrawn) The redox initiating system according to claim 44, wherein the dialkanoyl peroxide is selected from compounds of formula (III):

(III)

where R⁵ and R⁶ are independently selected from optionally substituted alkyl.

- 49. (**Withdrawn**) The redox initiating system according to claim 44, wherein the dialkanoyl peroxide is selected from dilauroyl peroxide, diacetyl peroxide, disuccinyl peroxide, di(3,5,5-trimethylhexanoyl) peroxide, and didecanoyl peroxide.
- 50. (Withdrawn) The redox initiating system according to claim 44, wherein the mole ratio of the diaroyl peroxide to the dialkanoyl peroxide ranges from 1:1 to 10:1.
- 51. (Withdrawn) The redox initiating system according to claim 44, wherein the mole ratio of the aromatic amine to the total number of moles of the diaroyl and dialkanoyl peroxide ranges from 1:2 to 1:8.

Docket No.: 0446-0188PUS1

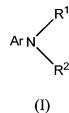
Page 10 of 17

Application No.: 10/587,653 Docket No.: 0446-0188PUS1
Reply dated May 17, 2011 Page 11 of 17

Reply to Office Action of February 17, 2011

52. **(Withdrawn)** The redox initiating system according to claim 44, wherein the aromatic amine is selected from N-ethyl-N-hydroxyethyl aniline, N,N-bis hydroxyethyl aniline, N-ethyl-N-hydroxyethyl-p-toluidine and N,N-bis 2-hydroxyethyl)-p-toluidine.

- 53. (New) A process for the preparation of solid polyester granules comprising:
- (i) preparing a solution of unsaturated polyester and a combination of diacyl peroxides in styrene, wherein the combination of diacyl peroxides comprises diaroyl peroxide and dialkanoyl peroxide having a diaroyl peroxide to dialkanoyl peroxide mole ratio that is 1:1 to 10:1,
 - (ii) emulsifying said solution in water to provide a stabilised oil-in-water emulsion,
 - (iii) adding to said emulsion an aromatic amine of formula (I):



where R^1 is an optionally substituted C_1 - C_{20} alkyl group, or –(CHR'CHR'-O)_nH, where n is 1 to 10 and each R' is independently selected from H and C_1 - C_3 alkyl;

 R^2 is an optionally substituted C_1 - C_{20} alkyl group, or -(CHR'CHR'-O)_nH, where n is 1 to 10 and each R' is independently selected from H and C_1 - C_3 alkyl; and

Ar is an optionally substituted aryl group,

such that reaction of said aromatic amine of formula (I) with each of the diaroyl and dialkanoyl peroxides generates a radical flux capable of initiating polymerisation of the unsaturated polyester and the styrene.